Claims

1   1.   A method for determining an estimated value of a mass flow in the intake
2   channel of an internal combustion engine, comprising the steps of:
3   - determining a measured value of an induction manifold pressure as the command
4   variable of a control loop,
5   - determining an estimated value of the induction manifold pressure as a regulating
6   variable of the control loop,
7   - determining the estimated value depending on a manipulated variable of the control
8   loop,
9   - calculating the manipulated variable depending on the difference between the
10   estimated value and a measured value of the induction manifold pressure and
11   depending on the time-related change of the measured value of the induction manifold
12   pressure, and
13   - calculating the estimated value of the mass flow in the intake channel depending on
14   the manipulated variable.

1   2.   The method as claimed in Claim 1, wherein the manipulated variable is
2   calculated by multiplying the difference between the estimated value and the measured
3   value of the induction manifold pressure by a correction factor, which factor is
4   determined depending on the time-related change in the measured value of the
5   induction manifold pressure.

1   3.   The method as claimed in Claim 2, wherein the correction factor is determined
2   from a characteristic curve.

1   4.   The method as claimed in Claim 1, wherein the manipulated variable is
2   corrected depending on a measured value of the air mass flow.

1   5.   The method as claimed in Claim 1, wherein the manipulated variable is

2   determined depending on the integral of the difference between the estimated value

3   and the measured value of the induction manifold pressure.

1 ·6.   A device for determining an estimated value of a mass flow in the intake

2 channel of an internal combustion engine, comprising:

3 - a sensor for measuring the value of an induction manifold pressure which is used as

4 the command variable of a control loop, wherein the control loop comprises:

5   - an estimation unit for estimating the value of the induction manifold pressure

6   which is used as a regulating variable of the control loop, wherein the

7   estimation unit receives a manipulated variable of the control loop,

8   - a calculating unit for calculating the manipulated variable depending on the

9   difference between the estimated value and a measured value of the induction

10   manifold pressure and depending on the time-related change of the measured

11   value of the induction manifold pressure, and

12   - a calculating unit for calculating the estimated value of the mass flow in the

13   intake channel depending on the manipulated variable.

1 7.   The device as claimed in Claim 6, wherein the calculating unit for calculating

2 the manipulated variable comprises a multiplier for multiplying the difference between

3 the estimated value and the measured value of the induction manifold pressure by a

4 correction factor, which factor is determined depending on the time-related change in

5 the measured value of the induction manifold pressure.

1 8.   The device as claimed in Claim 7, wherein the correction factor is determined

2 from a characteristic curve.

1 9.   The device as claimed in Claim 6, further comprising a air mass flow sensor for

2 providing a variable for correcting the manipulated variable.

1 10.   The device as claimed in Claim 6, wherein the calculating unit for calculating

2 the manipulated variable comprises an integrator for determining the integral of the

3 difference between the estimated value and the measured value of the induction

4 manifold pressure.